

## **FLUX EMERGENCE AND DIFFERENTIAL ROTATION TIMESCALES ON F-M TYPE STARS**

Gaitee Hussain

European Space Agency

GO20039

We propose to study differential rotation and flux emergence timescales on 100+ stars, ranging in spectral type from late-F to M in the open cluster, NGC 6866. This cluster is young enough to contain a mixture of both slow and fast rotators. Theories suggest that rapidly rotating active low-mass stars have a different dynamo mechanism compared to slow rotators. We will characterize the activity levels of stars covering a wide range of spectral type and rotation rate. We will exploit the high precision of Kepler to measure surface flows and flux emergence timescales on stars at a range of activity levels and spectral types in order to gain further insight into angular momentum evolution and stellar magnetic activity. We will use custom software and techniques to match chromospheric and surface activity. Our findings will inform and test flux emergence models currently being developed for cool stars.